## B. SCOPE OF WORK

### 1. Abstract

The Rose Bowl Operating Company (RBOC), in cooperation with the City of Pasadena (City) and the Metropolitan Water District of Southern California (MWD), is seeking financial support to replace and upgrade the irrigation system at the Brookside Golf Course. The RBOC is a California nonprofit, public benefit corporation, founded in 1995 by an act of the Pasadena City Council to manage the Rose Bowl Stadium and the adjacent municipal golf course complex. The RBOC Board of Directors consists of eleven culturally diverse directors, nine appointed by Pasadena City Council Members according to districts, the City Manager, and a representative of The Tournament of Roses Association.

The Brookside Golf Course is comprised of two contiguous 18-hole golf courses located on City owned property within a large city owned park known as the Central Arroyo. The courses were originally built in 1916 and are generously sized at approximately 140 acres per course. The two golf courses are the single largest user of water in Pasadena, averaging between 2-4% of the City's total water usage. The Rose Bowl was built immediately south of the golf courses in 1921 and is a registered federal landmark. In addition to use as a traditional public golf course, many of the larger fairways are also used for parking during events at the Rose Bowl. During larger events, tens of thousands of cars are parked on the golf course.

The proposed project includes installing new mainline piping, a state-of-the-art computerized control system, and weatherized evapotransporation and radio-controlled field satellites. The total cost of the proposed project is $457,000. Of this amount, the RBOC is seeking $182,800 or 40% of the total project cost. .

***Objectives***

This project will contribute directly and substantially to the CALFED objectives of attaining water use efficiency, water quality benefits and environmental benefits.

*Water Use Efficiency*

This proposal represents the first phase of a multiple-phase strategic plan to implement cost-effective water usage and to conserve water in the golf course to reduce water use consumption by 40%.

The RBOC recognizes it's financial responsibility to provide capital improvements to achieve water conservation. The RBOC is seeking financial assistance in this first phase to leverage and blend funding sources with mutual goals thereby enabling us to maximize

the outcome and continue with additional phases of work to achieve the overarching goal of efficient and conservative water usage throughout the region.

*Water Quality and Environmental Benefits*

In addition to the water use efficiency benefits, the project will achieve significant water quality and environmental benefits. The golf courses are located within a large park known as the Central Arroyo, which is part of the Arroyo Seco Watershed. The Arroyo Seco, a tributary of the Los Angeles River, is a natural riverbed that runs through the upper Arroyo and is channeled through the central and lower Arroyo. The Arroyo is the terrestrial home to numerous local animals, including dozens of nesting red-tail hawks, owls, migrating Canadian geese, bobcats, squirrels, rabbits, cottontail, jackrabbits, kestrels, cranes, ecrus, mallards, coots, various local bird species, dear, opossums, raccoons, skunks, coyotes, and the endangered yellow frog. The RBOC is committed to improving the ecological functions of the Arroyo and to assist in sustaining the local plant and animal species.

By investing in an improved irrigation system, the roots of the grass will be deeper and stronger and will require less pesticides and fertilizer. This reduction in pesticide and fertilizer use will achieve significant water quality and environmental benefits through the resulting reduction in toxic runoff into the watershed. Additionally, the vast majority of the mainline piping system identified for replacement is almost 85 years old, as old as the golf course itself. Many of these sections are made of asbestos cement that may also be introducing toxic runoff into the fragile environmental region.

## 2. Statement of Critical Water Issues

As the single largest user of water in Pasadena, water issues affecting the City of Pasadena deeply affect the Rose Bowl and Brookside Golf Course.

The City of Pasadena has a variety of water sources including ground water, local surface runoff, and imported water purchased from MWD. Surface water production has been virtually nil since 1994. Currently, about 40% of the City's demand are met by groundwater production and about 60% of the demand are water purchased from MWD.

Ground water is obtained from the Raymond Groundwater Basin. The City has rights to 12,708 acre-feet in the Raymond Groundwater Basin. The Basin is now well positioned to participate in expanded groundwater storage programs that will enhance the value and reliability of the groundwater resources.

The City of Pasadena diverts surface waters from two streams that flow within its boundaries. The larger of these is the Arroyo Seco. This source can account for approximately 3-5% of the City's total water supply.

Flood Control operations in coastal Southern California interact with reservoir operations are operated to provide short-term detention (days to weeks) of peak flows from rainfloods. Many of these reservoirs impound ephemeral streams, or streams whose runoff is so small that little water supply benefit is available. Artificial replenishment of the groundwater in the Raymond Basin is done primarily through four spreading grounds, one of which is the Arroyo Seco. The Arroyo Seco spreading grounds is owned and operated by the City of Pasadena and was built in the late 1940's. It was designed to recharge the groundwater basin. Current storm water spreading ground capacity is estimated based on the two parameters: storage capacity of the basin and percolation rate. The percolation rate is the rate that water seeps into the ground while the storage capacity is the amount of storm water the basin can hold or capture from any one storm. The Arroyo Seco Spreading Grounds averages 30 acre-feet storage capacity, 15 cfs percolation rate, and an intake capacity of 75 cfs. The current limitation in the Raymond Basin spreading grounds is the lack of storm water to spread. Located in a semi-arid environment, rainfall runoff comes predominately between October and May.

The Arroyo Seco Watershed encompasses an area of 13,700 acres (21.4 miles) mainly in the San Gabriel Mountains in the Angeles National Forest. The Arroyo Seco is a continuous stream, with large deviations in flow rate occurring due to annual cycles of wet weather storm runoff and dry weather spring source flows. The City of Pasadena Water and Power Department has water rights since 1914 to 25 cubic feet per second (cfs) of total withdrawal of the Arroyo Seco Watershed, which equates to approximately 3,500 to 4,000 acre-feet per year available for spreading and treatment. Approximately 20% of the water routed to the spreading grounds are lost through evaporation and percolation into the water table. The MWD source is utilized to make up this lost amount in the total Department supply.

Pasadena now contracts with the City of Glendale for reclaimed water; Pasadena is entitled to a maximum of 6,000 acre-feet of reclaimed water annually. Pasadena estimated use of reclaimed water is 4,700 acre-feet of which approximately 85% are used for irrigation and 15% is industrial/commercial use. The use of reclaimed water accounts for approximately 15% of the City's total annual average water demand. Customers of reclaimed water include parks, schools, golf courses, cemeteries, the city's power plant, freeway landscaping, nurseries, and industrial/commercial customers. The RBOC is aggressively working with the City Water and Power Department to develop a pipeline network that will provide reclaimed water to the Brookside Golf Course.

According to the City of Pasadena 2000 Urban Water Management Plan, some of the critical water issues that may impact the water demand in Pasadena include the deregulation in the water industry, growth in the demand for bottled water, housing development in the City of Pasadena, greater emphasis towards water conservation, and droughts. Notwithstanding an increase in the demand for water, it is extremely important to maximize local water sources thus reduce the dependency for MWD's water.

## 3. Nature, Scope, and Objectives of Project

The project consists of the following major elements: 1) installation of new mainline piping, and 2) a state-of-the-art computerized control system and radio-controlled field satellites.

The majority of the main line piping was installed in 1976. The vast majority of the mainline piping system identified for replacement however is almost 85 years old, as old as the golf course itself. Additionally, many of these older sections are made of asbestos cement.

The main lines are breaking on a regular basis. In fact, over 13 serious breaks occurred in December 2000 alone. There are currently approximately 400-500 saddle-clamps throughout the system, which are literally band-aiding the mainline pipelines. Each break wastes thousands of gallons of water, which are dumped onto the course and must be manually shut down. This obviously causes major disruptions in the functioning of the course and wastes critical water supplies. Complete replacement of the main line piping system would eliminate the health risks associated with the asbestos piping, increase system capacity with a greater flow rate from the water source, and take advantage of the flexibility available with a new control system.

The exception was for eight holes, four on each course, where existing main lines were determined at the time to be acceptable for future service. New power, communications, and low voltage control wires were installed to operate the new system.

An additional problem was identified in a 1999 report, was due to the lack of the physical capacity of the irrigation system to withstand the vehicular traffic. Most of the plastic valve lids are broken, causing significant liability, in addition to other problems that were not originally designed to withstand this level of abuse.

In fact, four outside and independent evaluations of the water management program and system at Brookside Golf Course, conducted in 1993, 1994, 1999, and 2000, have each recommended complete replacement of the irrigation system in order to take advantage of new water efficient sprinklers, control systems, and to discontinue use of ecologically dangerous asbestos cement piping.

The most recent technical report found that the sprinkler layout is not effective as it is generally 70' triangular spacing while today's standards encourage 60' to 65' spacing to improve control and uniformity. Another issue is the growth of the trees on the golf course. Almost all or the trees are larger and have a wider canopy today, thereby blocking the sprinkler stream or shading areas and causing wet areas to occur. The report recommended a new sprinkler layout to change the location of many sprinklers in relationship to the change in tress. It is recommended to replace all sprinkler and swing joints at one time in order to improve overall coverage of the golf course, efficiency and

control and performance. It is also recommend to replacing the antiquated control system, which is very costly to repair, and the limited availability of replacement parts.

The report went on to state "The irrigation system is reaching the end of its useful life and will become a detriment to maintaining the golf course in the near future instead of being a valuable asset for maintenance personnel."

In view of the considerable volume of water used at the site, there are two principle concerns: to ensure that water is used efficiently at the site, and secondly to economically reduce current consumption. Additional goals are to reduce pesticide and fertilizer usage thereby improving the ecological system for the wildlife in the area and preserving the natural environment for the thousands of visitors to the region.

The scope of the proposed project is to completely replace the current irrigation system, including the piping, sprinklers and control systems at the Brookside Golf Course.

The objective of the project is to upgrade the piping, sprinklers, and control system to replace dangerous asbestos, provide more flexibility, and ensure better long-term performance.

Beyond the immediate issues of the golf course, it is the objective of the RBOC to improve the water supply for the entire central Arroyo region. Water savings at the golf course could ensure an adequate water supply for the entire central Arroyo. The ecosystem of this region, established almost 85 five years ago, has become interdependent on the irrigation and water supply for the golf course and therefore of the whole area.

### 4. Methods, Procedures, and Facilities

Four separate technical evaluations have been conducted on the irrigation system and water management of Brookside Golf Course over the past eight years.

Through these reports, RBOC has received ample evaluations of the irrigation system and water management plans for the Brookside Golf Course. The RBOC has explored several options including: the possibility of replacement of the control system only, replacement of the system completely except for about 75% of the main line piping, and replacement of the entire system. Preliminary estimates for each of the projects have also been obtained. The RBOC believes that replacing the entire irrigation system at Brookside Golf Course is the appropriate and responsible decision.

The technical and scientific merit of the project is clear. The current piping system is more than 25 years old. In fact, large parts of the main line system are actually as old as the original golf course, built in 1916 and are made of asbestos cement. The piping system, sprinkler system and control systems are outdated, not efficient, and do not adequately conserve water.

The existing irrigation system at the golf course was installed in approximately 1976. It includes Toro 634 and 655 series valve-in-head (VIH) sprinklers and a Toro VT II series central/satellite control system. These products were generally accepted standards for the industry at the time. A newer model Toro VT 3 central/satellite control system was installed around 1986 and is still in operation today. One major problem concerning the existing control system is its age and limited availability of replacement parts. It is very costly to continue to repair these older satellite controllers. In evaluating the feasibility of replacing the control system raises concerns of matching new power wire and its size and capacity for supplying the new controllers. If a complete new irrigation system is installed, this concern is eliminated.

The evaluation also noted that the existing piping is too small to take advantage of new satellite control systems that would run multiple control stations and potentially more total systems per satellite controller. The major concern found in reviewing the overall piping system is that the original main line sections that were re-used in the 1976 redesign. The piping material is asbestos cement (AC) and is no longer made due to health concerns related to asbestos. In addition, the larger 10" and 12" main lines installed in 1976 are also Asbestos Cement piping.

The main line fittings used in the existing installation are cast iron and are still the preferred choice of fittings for current system design. However, other main line components such as gate valves and especially the pressure reducing valves (PRV) should be operated and services periodically to insure that they function properly. Considering the age of the main line gate valves and PRVs it is the technical expertise's advise that they will need to be repaired or replaced at some point in the near future.

A recent System Evaluation found that the existing water source has not changed since the design was completed for the 1976 system installation. The system was designed to supply a maximum of 2700 gallons per minute (gpm), which would apply .20" per day in about nine hours on the estimated 220 acres covered by the 36 holes. In reviewing the points of connection of the irrigation system, the size of the three-backflow devices and other appurtenances is consistent with this flow rate.

In addition to the water sources above, the City has the right to diver 1.82 cfs with a limit of 238 acre-feet from the Devil's Gate Tunnel. This tunnel predates the Devil's Gate Dam and reservoir and runs in the bedrock beneath the reservoir. The quality of water emanating from the tunnel is more suitable for agricultural use. The RBOC as attempted better utilization of the "tunnel water" recovered in the Devil's Gate Dam area, which is located just north of the golf courses. The tunnel water is a non-potable source of irrigation water. The technical evaluation conducted last year found major problems in the tunnel water source due to excessive pressure surges from the booster pump and no pressure tanks or discharge relief valve to reduce the system surges. While the alternative water source is still connected to the piping system, it has been isolated from the system with a gate valve due to excessive pressure surges from the booster pump.

Therefore, use of tunnel water system has been avoided until the booster pump and other appurtenances are checked for proper design and operation.

It is the intent of the RBOC to install the newest technologically advanced irrigation and computer systems available. The proposed project will install eight-inch PVC mainline pipe and will replace the central control computer and all field Satellites on both golf courses with radio controlled Toro Osmac or Rainbird Freedom. The Brookside Golf Course management will utilize a weather station to run irrigation by evaportransportation (E.T.). The computer will calculate the wind, solar radiation, and humidity to arrive at exact calculations for nightly irrigation programs.

## 5. Schedule

See Attachment A.
Once total funding is secured, the RBOC will release a Request for Proposals for public bid. The attached bar chart demonstrates that completion of the project will take approximately eighteen months.

## 6. Monitoring and Assessment

The RBOC has the fiduciary responsibility for the Brookside Golf Course and the proposed Brookside Irrigation System Replacement Project. The RBOC will submit project reports, both fiscal and programmatic on a quarterly basis to the California Department of Water Resources. The quarterly reports will include information on the completion percentage of each task and any issue or concern that might delay the work. The RBOC will submit an annual written monitoring report presenting the findings and address project progress to the DWR and will also prepare and file a final report upon the completion of the project. The RBOC is eager to participate in any oral or written presentations of the project as requested. We are very proud of the efforts to sustain the historic and ecological environment of the central Arroyo and will willingly agree to share our knowledge and experience with others.

American Golf, who has a contract with the RBOC for the operation of the golf course, will directly contract for the work and be culpable for its timely completion. The RBOC will require that a project manager will be assigned to the daily oversight of construction phase of the irrigation replacement project. The Project Manager will work closely with the Executive Director of the Rose Bowl and will provide weekly written updates on the project. American Golf will provide monthly monitoring reports to the RBOC on the progress of the project.

The RBOC has a particular advantage in this oversight as the current President of the RBOC is a landscape architect who has already assisted in making recommendations that have led to significant improvements in the maintenance and upkeep of the golf course and grounds. His expertise will be vital in the oversight and monitoring of the project.

The General Manager of the Rose Bowl will create a documentation file on each phase of the project thereby developing a solid informational storage system. This information is

considered public documents and will be accessible to all who attend RBOC meetings during the project or who request the data from the Rose Bowl management staff.

## C. OUTREACH, COMMUNITY INVOVLEMENT, AND INFORMATION TRANSFER

### 1. Outreach efforts to contact and Involve Participation from People in Disadvantaged Communities.

The City of Pasadena and the RBOChave a strong commitment to Affirmative Action and local hire. In fact, recent contracting at the Rose Bowl indicates a 12% Minority Business Enterprise (MBE) and 11% Women Business Enterprise (WBE) success rate.

The Rose Bowl and Brookside Golf Course are in a unique location. Immediately surrounding the rim of the central Arroyo are some of the wealthiest neighborhoods of Southern California averaging a per capita income of more than $40,000. Yet less than a few blocks north and east are some of the lowest-income neighborhoods in Pasadena, Northwest Pasadena – District 1 – averaging a per capita income of less than $7,000. The staggering disparity has not been lost on the RBOC who has constantly been in discussion with the immediate neighborhood over the number of events to be held at the Bowl and Brookside Park, and the Brookside Golf Course. Noise, traffic, and parking are serious issues to these residents who are extremely empowered and actively participate at RBOC meetings. While many residents of those neighborhoods would like to see fewer major events at the Bowl and central Arroyo, the RBOC recognizes that the more major events held, the more jobs are created for low-income residents and the more funds are available to the City to support economic projects and youth programs in the disadvantaged communities.

The RBOC has developed several very creative outreach and support programs for disadvantaged communities. The Pasadena Unified School District has been rated one of the ten most troubled districts in California, meriting the status of a "Challenge District." Eighty-three percent of the students in PUSD schools qualify for a free or reduced meal. Forty-seven percent of the district is classified as limited English proficient, Spanish being the primary language. The drop-out rate at PUSD high schools is almost 50%, and nearly two-thirds of high school students do not qualify for extracurricular activities, as they cannot maintain a "C" average grade point.

A free community Youth Golf Program has been operating at Brookside Golf Course as a unique outreach to all of the children of Pasadena. Children ages 7- 18 years are afforded free golf lessons and the opportunity to play on this premier municipal golf course. Savings generated by this project will enable this public facility to remain affordable to all residents.

The RBOC has enforced a strong local-hire policy at the Rose Bowl and Brookside Golf Course. Students from the three Pasadena High Schools are hired at major Rose Bowl events. Youth organizations are allowed to sell concessions and thus raise funds for their groups. Youth from high school football teams, marching bands, and academic clubs

have all participated. For example, the Blair Football Team earns over $16,000 annually parking cars at the Brookside Golf Course during major events at the Bowl. Other local low-income high schools have also participated including Franklin High School in East Los Angeles and Eagle Rock High School, which are both Los Angeles Unified schools and also in low-income areas. Literally hundreds of jobs for local youth are available through this effort. And disadvantaged young adults are hired at the Brookside Golf Course on a daily basis. Ground maintenance, kitchen assistance, and numerous entry-level jobs train local young people for future careers and provide a decent income. The overall economic benefit of major events of the Bowl echoes throughout Pasadena. Hotels and restaurants are full in Old Town and beyond. These businesses also hire hundreds of local residents.

A solid partnership has been developed between the Pasadena Unified School District (PUSD) and the Rose Bowl Operating Company. Two years ago, the RBOC raised the price of drinks sold at the Rose Bowl by .25 cents. This .25 cents has been donated to the Pasadena Unified School district for a specialized high school training program. PUSD has created an Academy at Blair High School on restaurant management and food service. This exciting program is training youth for a post-high school career while encouraging students to complete a high school diploma.

The RBOCis made up of one representative from each of the seven Council Districts in Pasadena. The Council member of that district chooses the representative. Other RBOC members include representatives of the Tournament of Roses, and the American Youth Soccer Organization. Many of the RBOC Board members serve or have served on local civic organizations including the current President of the RBOC who is the representative from District 1, Northwest Pasadena. As a the former Chair of the City's Affirmative Action Commission and many other local non-profit boards, outreach to the economically disadvantaged community, the local hire policy, and opportunities for minority or women-owned business participation will be strong. Another RBOC Board member is the President of a Los Angeles Community College; his community college has several training programs such as welfare-to-work. His expertise will be invaluable in setting up training programs for this project.

**2. Training, Employment, and Capacity Building Potential.**
Currently, approximately 487 people from disadvantaged communities are trained or hired per each event. It is expected that an equal number of local residents will be trained on the irrigation replacement project. Entry-level positions include excavation and demolition/recovery of the current piping and sprinkler system, ditch digging, sod protection, and general maintenance work. Middle-level supervisors and landscape specialists will also be employed. And project oversight, project management including scheduling staff, ordering supplies, coordination of the stages of each element will also be important upper-level duties. Landscape architects, construction foreman, project managers, will all consist of program managers. The Rose Bowl Golf Administrator and the General Manager of the Rose Bowl will ultimately oversee the entire project.
A simplified organizational chart demonstrates the basic responsibilities:

RBOC
Rose Bowl General Manager
Rose Bowl Golf Administrator
Project Manager
Construction Foremen
Crew

Clearly there are many opportunities for training, employment and capacity building. The RBOC will exploit those opportunities by requiring the contractor to prioritize the use of local residents in his hiring practices. Further, the contractor will be required to establish training opportunities in landscape management, plumbing, sprinkler installation, and electrical sub-contracting. It is expected that over 20 training positions will be created through this effort.

The potential for capacity development is also clear. It is the expectation of the RBOC that smaller local contractors will be awarded extra points and thus become competitive in this process. With close supervision and support, a local business may be able to significantly improve their ability to perform such a large undertaking. And thus become eligible for future large projects throughout the Los Angeles area.

**3. Plan for Dissemination of Information**

Public accountability for this project will be a strong component of this project as it is for every project of the Rose Bowl Operating Company. Monthly meetings are open to the public and run under the regulations of the Brown Act.

The RBOCwith the City of Pasadena Recreation and Parks Department has just completed an 18-month study of this parkland called *The Central Arroyo Master Plan.* The Plan has been very thoroughly discussed in at least 12 public meetings. It will soon be taken to the City Council for approval. Critical to the Plan is the decision for major restoration and preservation efforts for both the Rose Bowl and the Brookside Golf Course, which are historic to the region. No doubt that if funded, the Brookside irrigation System Replacement Project will be incorporated into the Central Arroyo Master Plan and become a part of this public document. Regardless, the RBOC will report on the results of this project to the Pasadena City Council who will disseminate the information to the general public through televised meetings and report findings.

In this highly urban and by federal definition, high-density population area, sustaining the natural environment for the animals whose habitat is the central Arroyo is a foremost concern of the RBOC. Water savings from this project will be jointly spread throughout the central Arroyo and be used to improve the terrestrial homes of the many wildlife animals, improve the nature trails and overall ecosystem, and the general environment for visitors. Water savings will directly support the natural plant and animal species found in the Central Arroyo.

**4. Copy of Letters**

See Attachment A

Letters of Announcement:

- City of Pasadena: City Manager
  Department of Water and Power
- Metropolitan Water District

## D. QUALIFICATIONS OF THE APPLICANTS, COOPERATORS,A ND ESTABLISHMENT OF PARTNERSHIPS

### 1. Resumes of Project Manager

See Attachment B

- Darryl Dunn
  General Manager, Rose Bowl Operating Company
- Frank Sansone
  Rose Bowl Golf Administrator

### 2. Role of External Cooperators

External Cooperators including the Pasadena Water and Power Department and the Metropolitan Water District, will be used as consultants and advisors. They will be provided reports of progress and be invited to assist in the selection of equipment.

### 3. Partnership Developed to Implement Project

The RBOC has established strong partnerships with key water suppliers and community organizations. Our partners work with us on a regular basis to improve the services in the central Arroyo to the community. No new partnerships were necessary for the development of this project.

## E. COSTS AND BENEFITS

### 1. Budget Summary and Breakdown

See Attachment C

### 2. Budget Justification

Salary and benefit costs are standard City union rates.
Material costs are industry estimates at present value.

### 3. Benefit Summary and Breakdown

a. Primary Benefits:

- Reduction of water overall consumption by 40% this project by 30%
  Benefit will be shared among all Pasadena residents as this will result in less dependency on purchased water supplies. Funds currently spent of water can be redirected for ecological support of the central Arroyo.
- Improvement of water efficiency by 35%
  Benefit will be shared among all Pasadena residents as this will result in less dependency on purchased water supplies. Savings redirected for ecological support of the central Arroyo.

Secondary Benefits:

- Reduction in pesticide use by 25%

  Benefit will be shared by entire region as this will result in fewer toxins in the groundwater and the improvement of the ecosystem for plants and wildlife.

- Reduction in fertilizer use by 15%

  Benefit shared by entire region as this will result in fewer toxins in the groundwater and the improvement of the ecosystem for plants and wildlife.

- Improvement of ecosystem - not quantifiable

b. The improvement of the ecosystem is not directly quantifiable without expensive research and study, which is not included in this proposed project. However, it is clear that the reduction of pesticide and fertilizer use, and the efficient use of water will benefit the plants and wildlife of this region. It is expected that the number and variety of plants, birds, and animals will increase. The benefit of this outcome will be shared by the entire region as thousands of visitors from all over Southern California come to the central Arroyo each month to hike, exercise, and simply enjoy the natural beauty of the area and the wildlife.

## 4. Assessment of Costs and Benefits

| **Present Value Table** | | | | | **Net Present Value** | | ($202,614) |
|---|---|---|---|---|---|---|---|
| **Assumptions:** | | | | | **Total Water Saved** | | 4,284 |
| *Discount Rate* | | *6%* | | | **Benefit Per Unit** | | ($47) |
| *Escalation Rate* | | *0%* | | | | | |
| **Water Savings Rate** | | *30%* | | | | | |
| *Cost of Local Production of Water* | | *$100* | | | | | |
| **Years** | **Costs** | | | **Benefits** | | | |
| | **Materials and Labor** | **Total** | | **Water Saved** | **Unit Price of Water** | **Value of Water Saved** | **Total** |
| 0 | $457,000 | $457,000 | | 204 | $100 | $20,400 | $20,400 |
| 1 | | $0 | | 204 | $100 | $19,245 | $19,245 |
| 2 | | $0 | | 204 | $100 | $18,156 | $18,156 |
| 3 | | $0 | | 204 | $100 | $17,128 | $17,128 |
| 4 | | $0 | | 204 | $100 | $16,159 | $16,159 |
| 5 | | $0 | | 204 | $100 | $15,244 | $15,244 |
| 6 | | $0 | | 204 | $100 | $14,381 | $14,381 |
| 7 | | $0 | | 204 | $100 | $13,567 | $13,567 |
| 8 | | $0 | | 204 | $100 | $12,799 | $12,799 |
| 9 | | $0 | | 204 | $100 | $12,075 | $12,075 |
| 10 | | $0 | | 204 | $100 | $11,391 | $11,391 |
| 11 | | $0 | | 204 | $100 | $10,746 | $10,746 |
| 12 | | $0 | | 204 | $100 | $10,138 | $10,138 |
| 13 | | $0 | | 204 | $100 | $9,564 | $9,564 |
| 14 | | $0 | | 204 | $100 | $9,023 | $9,023 |
| 15 | | $0 | | 204 | $100 | $8,512 | $8,512 |
| 16 | | $0 | | 204 | $100 | $8,030 | $8,030 |
| 17 | | $0 | | 204 | $100 | $7,576 | $7,576 |
| 18 | | $0 | | 204 | $100 | $7,147 | $7,147 |
| 19 | | $0 | | 204 | $100 | $6,742 | $6,742 |
| 20 | | $0 | | 204 | $100 | $6,361 | $6,361 |
| **Total** | **$457,000** | **$457,000** | | | | **$254,386** | **$254,386** |

Analysis calculated using the Department of Water Resources, Water Use Efficiency Office's **Cost-Effectiveness Tool Version 1.1**

**ATTACHMENT A**

**Rose Bowl Operating Company**
**Water Efficiency Project**

**Brookside Golf Course Irrigation**

| **Mainline Replacement Project** | |
|---|---|
| Materials | $160,000 |
| PVC pipe | $110,000 |
| Gate valves | $22,000 |
| Saddle clamps | $7,000 |
| Electric valves | $8,000 |
| PVC cement | $4,000 |
| PVC angle fittings | $9,000 |
| *Materials Subtotal* | *$160,000* |
| Labor | $70,000 |
| ***Mainline Replacement Total*** | ***$230,000*** |
| | |
| **Control System and Satellite Replacement Project** | |
| Central control system | $50,000 |
| Satellites | $90,000 |
| Weather station | $15,000 |
| *Materials Subtotal* | *$155,000* |
| Labor | $77,000 |
| ***Control Replacement Total*** | ***$227,000*** |
| **Total** | **$457,000** |

ATTACHMENT A

# RBOC Brookside Water Efficiency Project
## TIMELINE